

An aerial photograph showing a complex landscape. A river flows through the center, with several bridges crossing it. To the left of the river, there are several large, circular industrial tanks and various buildings. To the right, there are more industrial buildings, parking lots filled with cars, and a large area of bare earth. A multi-lane highway and several railroad tracks run parallel to the river on the right side. The overall scene is a mix of industrial, commercial, and residential development.

Tidal Four Mile Run Total Maximum Daily Load Study

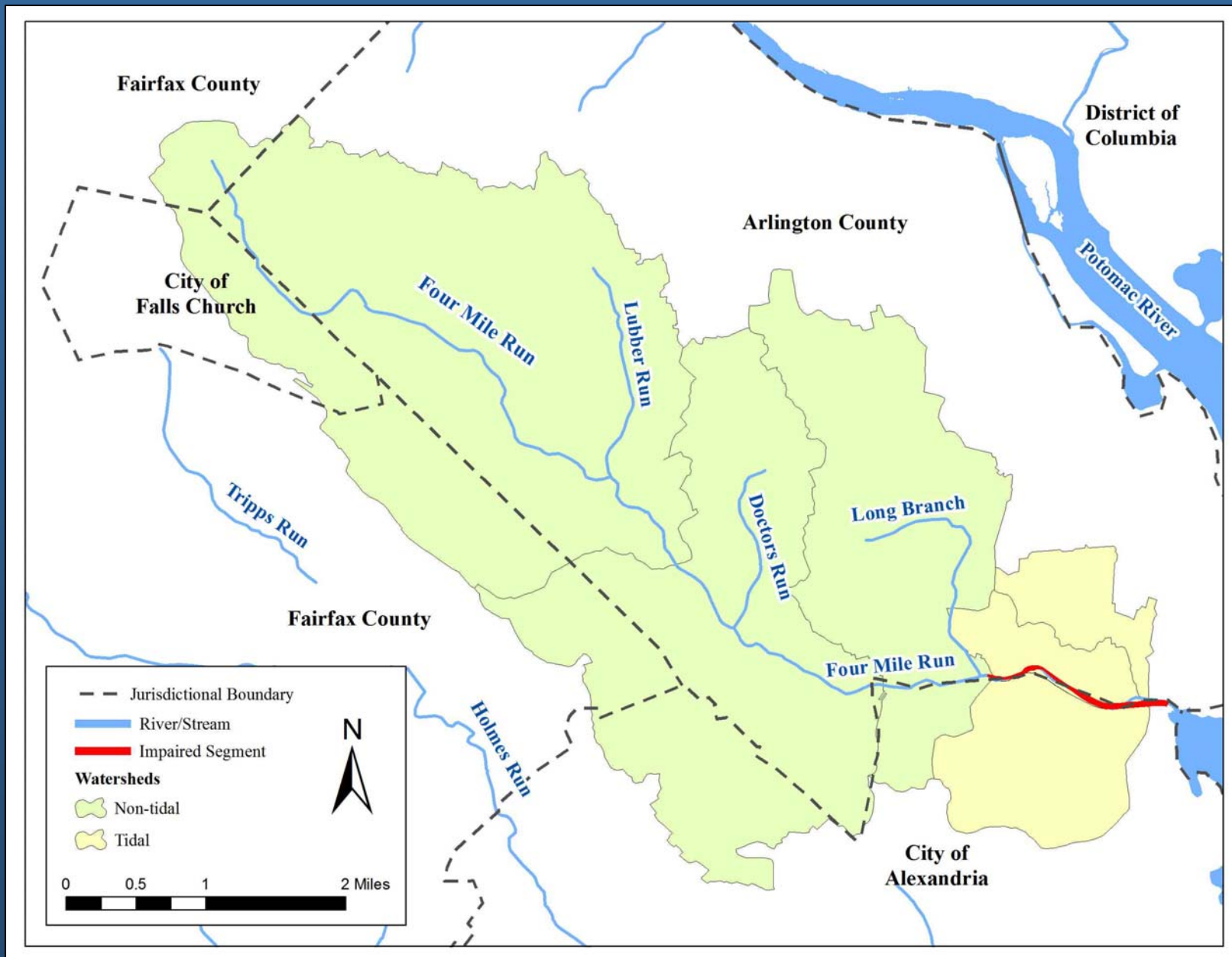
**Public Meeting
March 8, 2010**

Why are we here?

The tidal portion of Four Mile Run does not meet water quality standards.

- Where is the Tidal Four Mile Run Watershed located?
- How do we know standards aren't being met?
- Why doesn't Tidal Four Mile Run meet standards?
- What is being done to correct the problem?

Location of Tidal Four Mile Run





How do we know if water bodies in Virginia are healthy?

- Perform physical and chemical monitoring on water bodies throughout the state.
- Monitor parameters such as:
 - pH
 - Temperature
 - Dissolved Oxygen
 - Biological Community
 - Bacteria
 - Nutrients
 - Fish Tissues
 - Metals/Toxic Pollutants



What does DEQ do with the monitoring data that is collected?

Compare the data collected to the water quality standards.

Water Quality Standards:

- Regulations based on federal and state law.
- Set numeric and narrative limits on pollutants.
- Consist of designated use(s) and water quality criteria to protect the designated uses.



Designated Uses

- Recreational
- Public Water Supply
- Wildlife
- Fish Consumption
- Shellfish
- Aquatic Life



Recreational Use Impairment

What are Fecal Coliform and *E. coli* Bacteria?

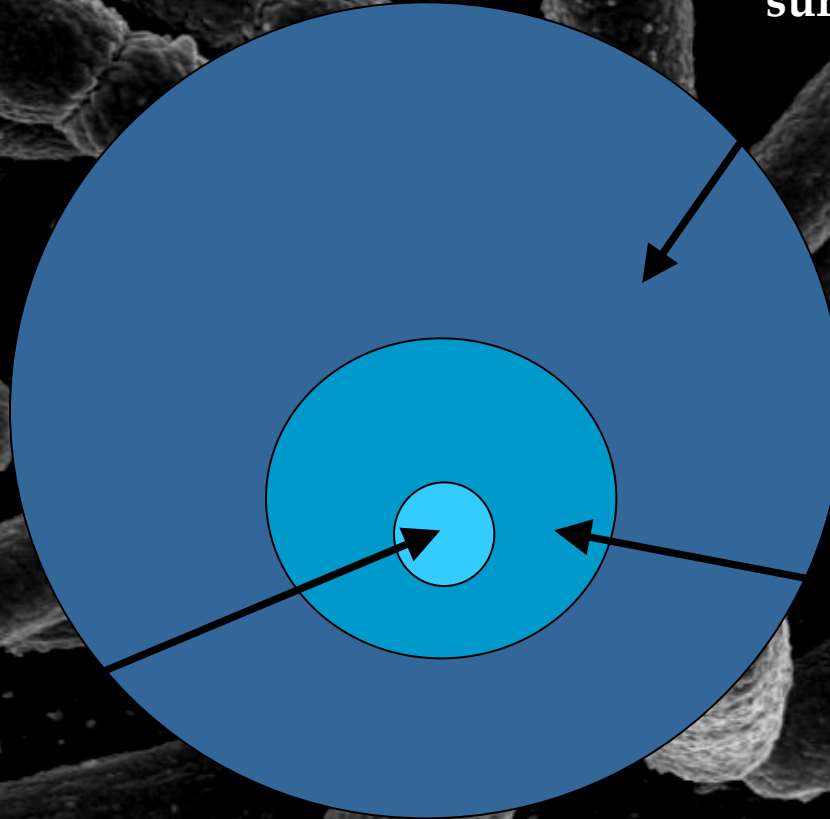
Coliform Bacteria:
Commonly found in soil, decaying vegetation, animal feces, and raw surface water

***Escherichia coli*:**

- Subset of fecal coliform bacteria
- Correlate better with swimming associated illness

Fecal Coliform:

- Found in the digestive tract of humans and warm blooded animals
- Indicator of the potential presence of pathogens in water bodies



Potential Sources of Fecal Coliform Bacteria



What happens when a water body doesn't meet water quality standards?

- Waterbody is listed as “impaired” and placed on the 303(d) list.
- Once a water body is listed as impaired, a Total Maximum Daily Load value must be developed for that impaired stream segment to address the designated use impairment.
- TMDL Studies are required by law:
 - 1972 Clean Water Act (CWA)
 - 1997 Water Quality Monitoring Information and Restoration Act (WQMIRA)

What is a TMDL ?

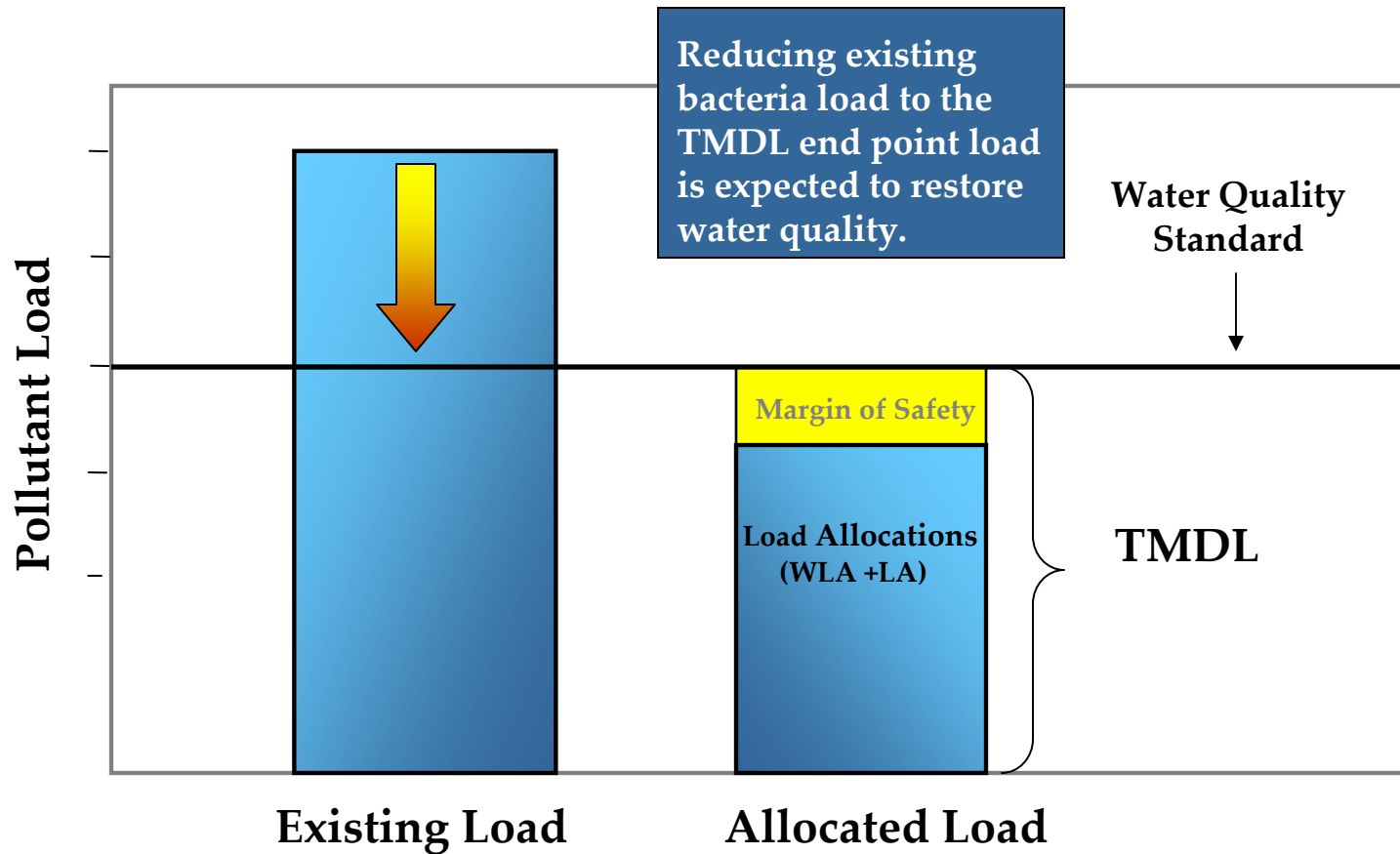
Total Maximum Daily Load

$$\text{TMDL} = \text{Sum of WLA} + \text{Sum of LA} + \text{MOS}$$

Where:

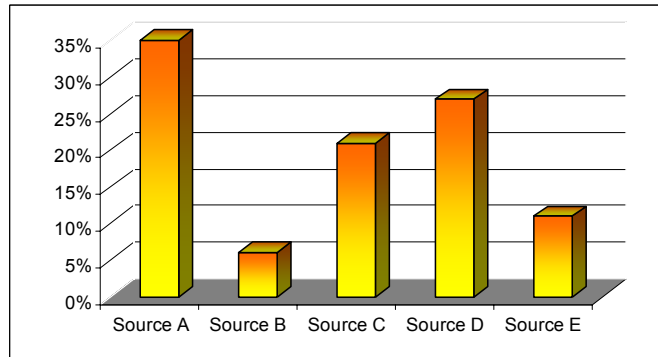
TMDL	=	Total Maximum Daily Load
WLA	=	Waste Load Allocation (point sources)
LA	=	Load Allocation (nonpoint sources)
MOS	=	Margin of Safety

An Example TMDL

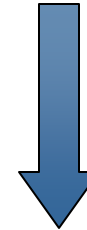


We are here

TMDL Study

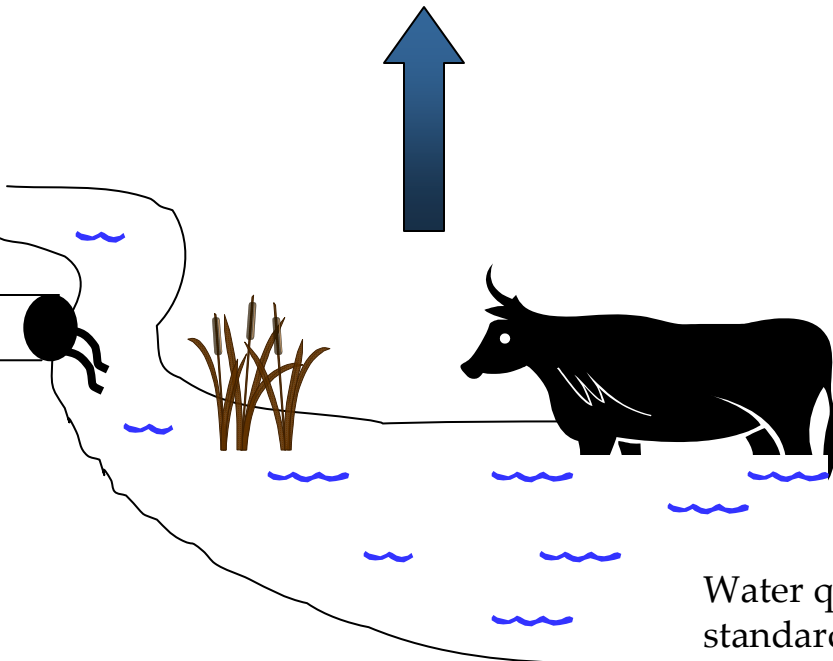


Implementation Plan

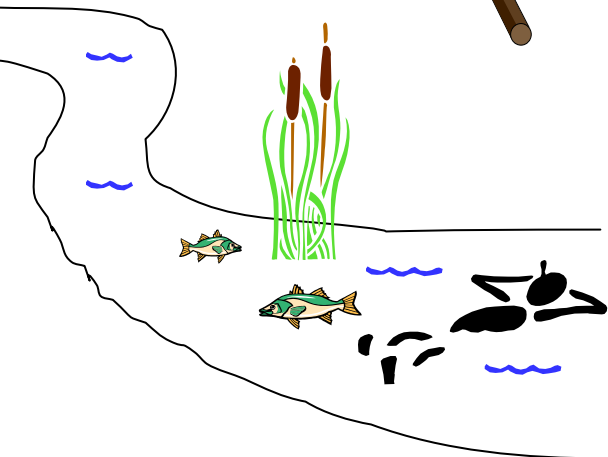


Implementation

Monitoring



Water quality standards not met



TMDL Development Methodology

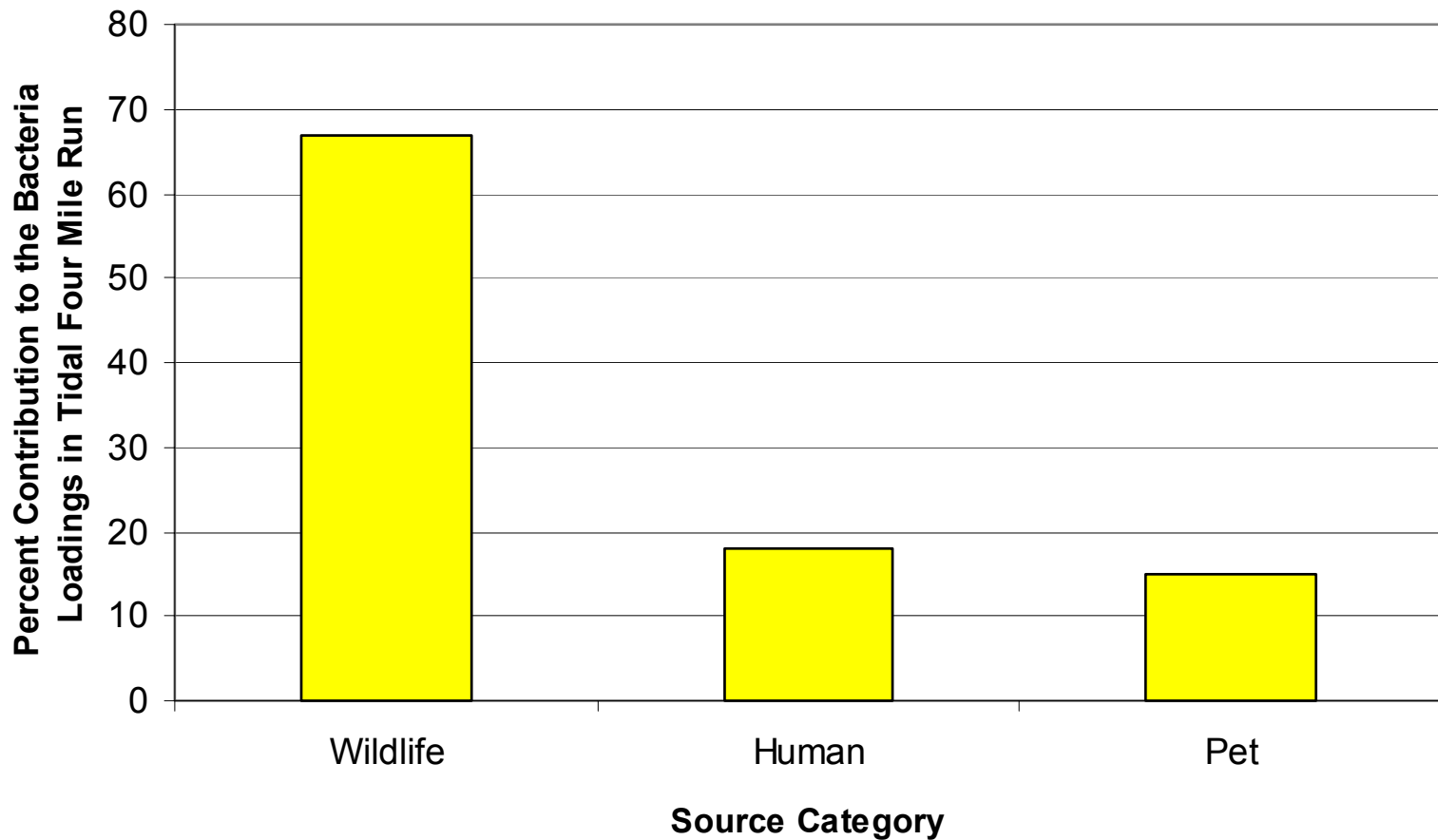
Project Initiated: Fall of 2008

Since then:

- Collected data and performed a watershed assessment.
- Evaluated the sources of bacteria in the watershed.
- Used a computer model to analyze the data.
- Determined the bacteria reductions required to meet water quality standards in Tidal Four Mile Run.

What are the Sources of Bacteria in Tidal Four Mile Run?

Major Sources of *E. coli* Bacteria in the Tidal Four Mile Run Watershed



Required Reductions by Source

How much do each of these sources need to be reduced in order to meet water quality standards?

Waterfowl	Raccoon	Other Wildlife	Human	Pet
95%	95%	95%	98%	98%

Tidal Four Mile Run TMDL (cfu/year) for <i>E. coli</i> Bacteria			
WLA	LA	MOS	TMDL
1.42E+14	3.26 E+12	Implicit	1.45E+14

How Can these Reductions be Achieved?

TMDL Implementation Plan:

- Required by State Law (WQMIRA 1997*).
- Strategy for how to make reductions required by the TMDL Study.
- Relies heavily on public participation.
- Creates measurable goals and milestones to track the progress of the implementation.
- Incorporates Best Management Practices (BMPs) to achieve reductions.

**WQMIRA: Water Quality Monitoring Information and Restoration Act*

Potential Implementation Plan Measures

- Implementation Plan completed for Non-Tidal Four Mile Run in 2004.
- Non-Tidal TMDL IP Proposed the Following BMPs:
 - Proper Pet Waste Management
 - Sanitary Sewer Maintenance and Inspections
 - Stormwater Treatment
 - Stream Corridor Restoration
 - Education and Outreach
 - Monitoring Programs

The Complete Non-Tidal Four Mile Run TMDL Implementation Plan is available online at:

<http://www.deq.virginia.gov/tmdl/iprpts.html> or
<http://www.novaregion.org/index.aspx?NID=213>



In the Meantime...

- Citizen monitoring
- Pick up after your pet
- Educate others



Comment Period

Comment Period for the Draft TMDL Report:

- March 8, 2010 to April 6, 2010
- Comments should be submitted in writing to:
Katie Conaway
13901 Crown Court, Woodbridge, VA 22193
Katie.Conaway@deq.virginia.gov

Draft Report is available on the DEQ website at:

<https://www.deq.virginia.gov/TMDLDataSearch/DraftReports.jspx>

Note: If not do not have internet access and wish to obtain a hard copy of the report, please contact Katie Conaway (703-583-3804).

CONTACTS



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